

or to a solitary retreat "with 6 or 7 gentlemen and scollars, who have resolved to live retyredly and follow their studyes and experiences, if these troublesome times molest not." A short time afterward Child carried out his intention of settling in Ireland, which at that time was regarded as a land of promise, and there, after a few years' service as an agricultural expert, this cultured gentleman and scholar passed away in the spring of 1654.

In some respects Child might be regarded as the best typical illustration of a scientific man of his time. His interests, as reflected in Dr. Wilson's transcription of his book list, covered almost the entire range of sciences and pseudo-sciences of the period. He was a wide traveler, and could count among his acquaintances nearly all the eminent scientists of his day. The high regard in which he was held is indicated in Dr. French's long dedication to Child of his English translation of Agrippa's "Occult philosophy" (London, 1651). While, as in the works of other scientists of this period, there is a strong tincture of occultism in Child's writings, this tendency is overbalanced by the very practical nature of his views. His essay, "A large letter concerning the defects and remedies of English husbandry written to Mr. Samuel Hartlib," published in "Samuel Hartlib, his legacie" (London, 1651), stamps him as an accurate observer and very practical man of science.

A protégé of Child during his residence in Boston was young George Stirk, or Starkey, who soon after his graduation from Harvard in 1646 equipped a laboratory in Boston for the pursuit of his alchemical experiments. In 1650 Starkey followed Child to England, where he shortly exhibited various alchemical manuscripts in Latin which he said had been written by a mysterious philanthropic adept under the name of Eirenaeus Philalethes and were given to him by a friend in New England. Two years after Starkey's death from the plague in 1665 the most important of these manuscripts, "Introitus apertus ad oclusum regis palatium," was published in Amsterdam. A long dispute arose as to whether Child (the New England friend of Starkey), or Starkey himself, or another adept, Thomas Vaughan, who wrote under the name Eugenius Philalethes, was the author of the treatise. This interesting controversy (in which the name of Winthrop, another New England friend of Starkey, was also suggested as the author) has continued for over two centuries. It is described in detail by Professor Kittredge, whose own opinion, as expressed at the conclusion of his work on Child (p. 146), is as follows:

"As a matter of fact, as I hope to prove when time serves, Eirenaeus Philalethes was the creation of George Stirk's teeming brain and not too scrupulous conscience, and the works ascribed to him, so far as they ever existed, were of Stirk's own composition."

It is to be regretted that Professor Kittredge, before his death on July 23, 1941, did not publish the final proof of this assertion and thus put an end to the long-circulated statement that the alchemical manuscripts, supposedly acquired by Starkey in Boston, were com-

posed by Dr. Robert Child. Even after excluding the supposition of Child being the author of these documents the possibility remains that this generous devotee of science may have given his admirer Starkey certain manuscripts about which the latter afterward spun romantic tales concerning the adept who wrote them; and what could be more natural than that, in delineating the character and experiences of this imaginary cosmopolite, he should have had before him the image of his honored patron, Dr. Child? The latter, as we know from items 16 and 35 of his book list, was a collector of manuscripts as well as of books. It will be seen that Dr. Robert Child is not only an actual historic figure but also something of a legend.

The students of alchemical literature, who have puzzled over some of the problems that have been referred to, will have an especial interest in reading Dr. Wilson's scholarly transcript of the catalog of the "libri chymici" that once belonged to that humane and most interesting figure in early seventeenth century science—Doctor Robert Child the Remonstrant.

TRANSCRIPT AND BIBLIOGRAPHICAL EXPANSION OF THE LIST

As may be seen in the facsimile, the original entries in this list are highly condensed, giving usually little more than the last name of the author and a catch-title, with sometimes the size of the volume. Fortunately there is also a grouping by language, although even in this some errors occur.

Not a little of the medieval scribal system of abbreviations and contractions persists in this list of the year 1641. It is the modern editorial practice, when expanding these to the full spelling, to print the supplied letters within curves. Library practice, on the other hand, puts all supplied words in a bibliographical entry into square brackets. In the expansions here offered, however, it has seemed best to use square brackets for any kind of addition to the original entry, whether of letters within a word or of bibliographical data not given by Child. This leaves the curved marks of parenthesis for explanatory comments by the editor.

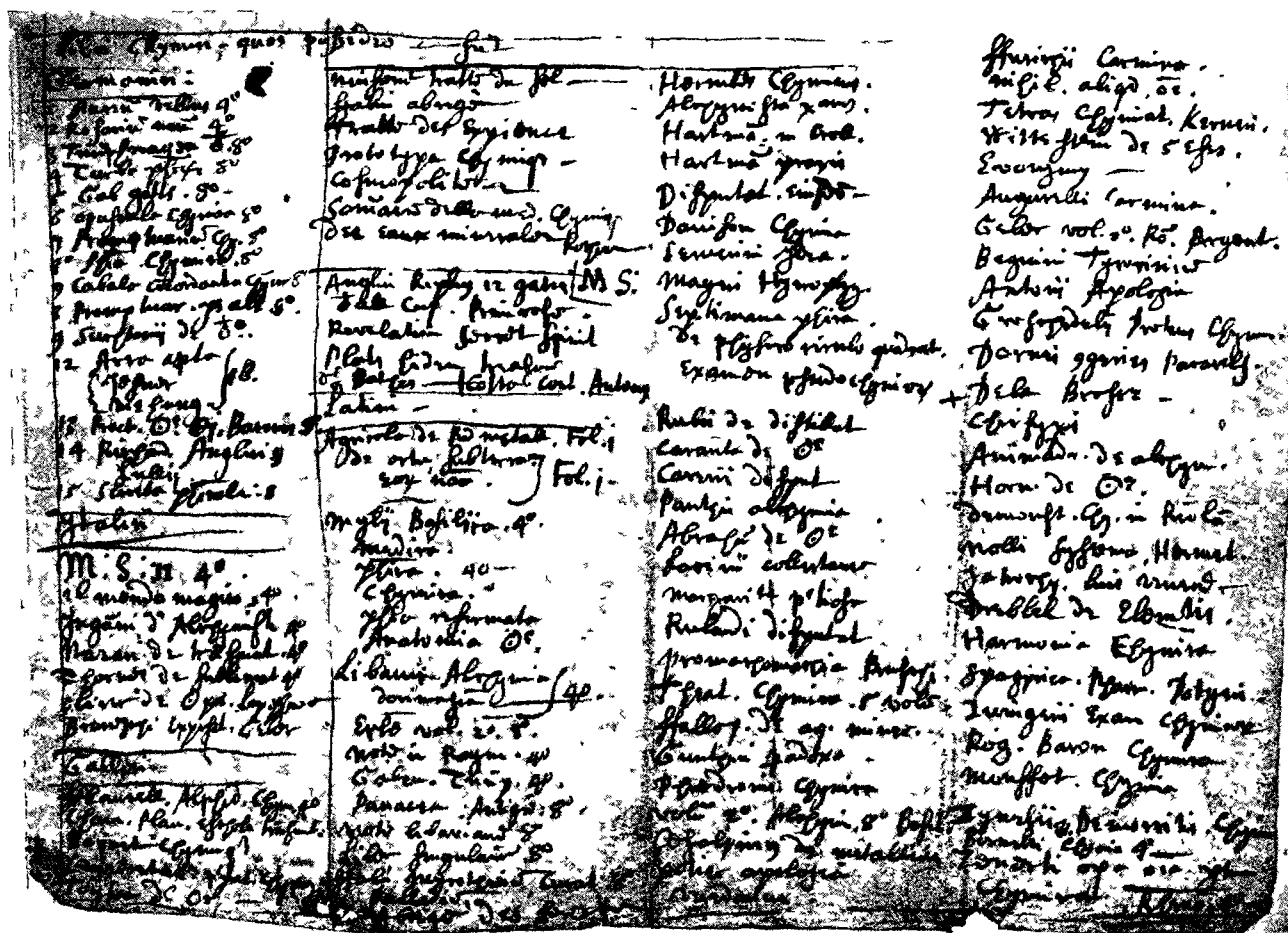
The expanded entries take three main forms. In the great majority of instances, the author's name stands first, separated by a comma from the italicized title. In a considerable number of entries in Latin, the author's name is in the genitive case, usually before but sometimes after the title, which is not then set off by commas. Finally, in a few difficult cases it seems easier to give first a mere transcript of what is found in the list, and to add in curves the full name, title, and imprint.

For the most part, it is hardly necessary to say, these books have been described at second hand, on the basis of information given in such standard works as Ferguson's "Bibliotheca chemica," Gmelin's "Geschichte der Chemie," Lenglet Dufresnoy's "Histoire de la philosophie hermétique," and the printed catalogs of the British Museum and the Bibliothèque Nationale, supplemented often by Schmieder, Kopp, Bolton, Caillet, Poggendorff, and others.

Out of a total of 112 entries, 84 have been identified with fair certainty, 11 defy identification (including Nos. 16 and 35, which are designated as manuscripts and so could not be identified anyway), and 17 are doubtful for one reason or another. Among the doubtful cases there are a few (Nos 5, 13, 78, 96, and 98) that may be said to contribute in a somewhat vague way to our bibliographical knowledge. That is to say, they suggest the existence of certain early editions that seem today to have disappeared completely. Items which are mentioned in the correspondence of Child and Winthrop have been starred in the index which follows the list.

to appear from an American press, the editor, Dr. George Sarton, explained the situation and extended to all contributors to No. 86 the permission to publish their articles elsewhere if they so desired. With a full understanding of the circumstances, the JOURNAL OF CHEMICAL EDUCATION publishes the list

Meanwhile Dr. Browne, who first called attention to the list and who has written the introduction to the article, learned that Dr. Harold S. Jantz, of Princeton University, had independently done a good deal of work on the problem, and had made a particular search for Winthrop books in the Society Library in New York (referred to hereafter as NYSL), the New York Acad-



FACSIMILE OF A PORTION OF ROBERT CHILD'S CHEMICAL BOOK LIST

Publication of this book list was originally arranged for in 1940 in No. 86 of *Isis*, which was expected to be the last number of that periodical to appear from the St. Catherine Press. Page proofs were received in May of that year, were sent to Belgium, but came back in December by way of Siberia, unopened, the envelope marked "Maison Fermée." In the first number of *Isis*

emy of Medicine (NYAM), and the Massachusetts Historical Society Library (MHS). Dr. Jantz has generously made his observations available to us, and a considerable number of these are included in the notes appended to the titles. Further suggestions or corrections from interested scholars will be gratefully received.

LIBRI CHYMICI QUOS POSSIDEO SU[N]T:

Germanici

1. [Salomon Trissmosin], *Aureu[m] vellus*, [oder, *Guldin Schatz und Kunstkammer*, Rorschach am Bodensee, 1598 (but most copies of this ed seem to be dated 1599)], 4° (Also, Basel, 1604.)
2. [Benedictus Figulus], *Rosariu[m] nov[um] olympicum et benedictum*; *das ist: Ein newer gebenedeyter philosophischer Rosengart*, Basel, the author, 1608], 4°.
3. [Basilius Valentinus], *Truu[m]phwagen* ♂ (= *antimonu*), [Leipzig, Friederich Lankisch, 1624], 8° (Dr Jantz has noted a copy at NYSL, with the note (by Child?): "Emi Antwerpiae 1642")
4. [Philipp Morgenstern], *Turba ph[ilosoph]or[um]*; *das ist, Das Buch von der guldenen Kunst*, Basel, Ludwig König, 1613], 8°
5. *Gab gotts*, 8°. (Probably a separate ed. of Samuel Baruch, *Donum Dei*, which was published as vol II of Abraham Eleazar, *Uraltes chymisches Werk*, Erfurt, Augustinus Crusius, 1735; Leipzig, Lankisch, 1760, 8° The bibliographies, however, know nothing of a separate early edition.)
6. *Opuscula chymica* (read *chemica*), [*das ist, Von dem gebenedeyten Stein der Weisen, dess ph[ilosoph]i Herrn Bernhardi Grafen von der Marck und Terns chemische Schriften*, edited by Joachim Tancke, Leipzig, J. Rosen, 1605], 8°
7. [Joachim Tancke], *Promptuariu[m] al[chy]miae, das ist: etliche ausserlesene philosophische Schriften und Tractatein*, Leipzig, Henning Gross der altere, 1610], 8° (Later eds, 1612, 1614, 1619 See also No [10] below)
8. Ph[ilosoph]ia chymica, 8° (?? = Gerhard Dorn, *Schlüssel der chymischen Philosophie*, Strassburg, Lazarus Zetzner, 1602, 8°).
9. [Franz Kieser], *Cabala [chymica] Co[n]cordantia chy[m]ica [Azot philosoph. solificatum Drey zwor ne ausgegangene Tractatein*, Muhlhausen, Martin Spiess, 1606], 8°
- 8 [read 10] [Joachim Tancke], *Promptuariu[m]*, *pl[ar]s alt[era]*, 8° (= *Promptuarium alchemiae ander Buch*, Leipzig, Henning Gross, 1614, 8° See No 7 above)
- 9 [read 11] *Suchtenii de ♂* (= Alexander von Suchten, *Antimonu mysteria gemina Das ist: Von den grossen Geheimnissen dess Antimonu*, Leipzig, Jacob Apel, 1604, 8°; Nuremberg, widow and heirs of Paul Furst, undated, 8° In NYSL, No 240, is a copy of the 1604 ed with the autograph "Rob Child his booke 1636")
12. *Arca ap[er]ta* John de Mehung, 16°. (?? = *Artificiosissimi arcam aperta arca*, Frankfurt, 1617, 8°, stated by Lenglet Dufresnoy to be in German, and undoubtedly one of the numerous forms of the anonymously published tract of Johann Grasshoff, *Der kleine Bauer*, but the size is wrong, and there is no connection with the name of Jean de Meung. Dr. Jantz is inclined to read "Jesire" rather than "John de" and suggests that the book may possibly be the *Wasserstein der Weysen*, Frankfurt, 1619, to which are appended two tracts: (1) "Johan von Mesung," and (2) "Via veritas der einigen warheit." Of this there is a copy (Winthrop's?) at the NYAM. In a letter to Winthrop in 1641 Child remarks that he is sending by ship the "Arca ap[er]ta in High Dutch, w[hi]ch I desire you to keep" But in 1650 he again wrote to Winthrop. "If you have my Arca Aperta let me know, for I can not find it.")
13. *Pract[ica]* ♂ (= *sohs*) R[oger]i Baconis, 8° (Not identified as a separate publication, doubtless *Die Practick oder Process Rogeri Baconis de sole*; for editions in certain alchemical collections cf. Ferguson, I, p. 64, the earliest being in Joachim Tancke, *Promptuarium alchemiae*, Leipzig, 1614.)

14. Richard[i] Anghci [*Correctorium alchymiae*, Raimundi Lulli [*Apertorium et accuratio vegetabilium*, *Des Königs Gebers auss Hispanien Secretum*, Strassburg, Bernhart Jobin, 1581 and 1596], 8°
15. *Secreta ph[ilosoph]icali[a]*, 8° (Not identified)

Italici

- [16]. M·S: II (= manuscripta duo ?), 4°
- [17]. *Il mondo magico*, 4° (Not identified)
- [18]. *Ingan[n]i d'Alchymisti*, 4° (? = Evangelista Quattrami, *La vera dichiaratione*, Rome, Vincentio Accolti, 1587, 4°; the running title is *Dichiaratione dell' inganno dell' alchymisti moderni*)
- [19]. [Giovanni Battista] Nazari, *De transm[ut]atione*, Brescia, Pietro Maria Marchetti, 1599], 4° (Earlier editions, according to Ferguson, II, p. 131, had a different title)
- [20]. Thornei (?), *De sublimat[ione]*, 4° (Not identified)
- [21]. [Ohverus de] Oliver[iis], *De* ♂ (= *auro*) *pot[abilis]* [*De]lap[ide] ph[ilosoph]or[um]*. (Ferguson, II, p. 154, reports a defective copy in Latin, having the two titles in the reverse order, with the place and date torn away, but the dedication dated at Mantua, 1620 The work appears, again in Latin, in the *Gnaecium chymicum*, 1679, p 415 It seems uncertain whether Child had an early edition in Italian or merely placed a copy of the 1620 ed under his "Italici" because it was written and published in Italy)
- [22]. [Giovanni] Braceschi, *Exposit[ione di] Geber [philosopho]*, Venice, G. Giolito, 1544, 8°

Gallici

- [23]. [Nicolas] Flamell, *Alph[abet] d[e] chym[ie]*, 4°. (This may be a paraphrase of the title *Figures hieroglyphiques*, although no separate edition seems to be recorded It is understood to have been first published as the second item in P. Arnaud, *Trois traictez*, Paris, Guillaume Mariotte, 1612, 4°)
- [24]. Cham Plan (= David de Planis Campy), [*L'ouverture de l'eschole [de philosophie] tra[n]s[um]u[t]at[ion]e metallique*, Paris, Charles Sevestre, 1633, 8°].
- [25]. [David de Planis Campy], *Bo[u]quet chymiq[ue]*, Paris, Pierre Billaine, 1629, 12°
- [26]. [Joseph] Quercetan[us] (*i e.*, Duchesne), *P[re]p[ar]at[ion] at[ion] chymiq[ue]* (?? = *Tracté de l'exacte préparation spagyrique des médicaments*, Paris, 1638, 8°)
- [27]. [Salomon Trissmosin], *Toyson d'or*, [Paris, Charles Sevestre, 1612, 8°].
- [28]. [Jacques de] Nuisem[en]t, *Tra[ic]té du [vray] sel [secret des philosophes et de l'esprit general du monde]*, Paris, Perier, 1620, 8°
- [29]. Ffabri Abregé (= Pierre Jean Fabre, *Abrégé des secrets chymiques*, Paris, P Billaine, 1636, 8° Apparently repeated as No. 56 below, in the list of "Latini." In his letter of 1641 Child speaks of sending his own copy of this work to Winthrop as a loan.)
- [30]. *Tratte des exp[er]iences*. (Not identified.)
- [31]. [René de la Chatre], *Prototype [ou très parfait et analogique exemplaire de l'art] chymiq[ue]*, (read *chimicque*), Paris, 1620 and 1635, 8°
- [32]. [Michael Sendivogius], *Cosmopolite [ou Nouvelle lumiere de la physique naturelle traduit nouvellement de latin en françois par le Sieur De Bosnay]*, Paris, Pierre Billaine, 1618, 8°, also 1628, 1629]
- [33]. [François Du Soucy], *Som[m]aire della* (read *de la*) *med[icane] chymiq[ue]*, Paris, Pierre Billaine, 1632, 8°
- [34]. [*Traté des observations nouvelles et vraye connoissance des eaux minerales*, [par Henri de] Rochas, [Paris, 1634 and 1636, 8°]. (The letter of 1641 mentions "Rochas des Eaus Minerals")

Anglici

- [35]. [George] Ripley, [*The compound of alchymy. divided*

- into] twelve gates, MS (An ed was published at London, 1591)
- [36] ♂ all Cup Primrose (= *The antimomall cup twice cast* Written by Jacobus Primerosius, tr by R Wittie, London, B A[lsop], and T Fawcitt, 12°)
- [37] [Iohn Baptista Lambye], *Revelation [of the] secret spirit, [declaring the most concealed secret of alchymie Written first in Latin by an unknown author, but explained in Italian. Lately translated into English by R N E,* London, Iohn Haviland for Henry Skelton, 1623, 16°] (For the underlying Italian, cf Lenglet Dufresnoy, III, p 80 G B Agnelli, *Esposizione sopra un libro intitolato Apocalypsis spiritus secreti*, London, 1565 Dr Jantz reports a copy (Winthrop's?) at MHS)
- [38] [Gabriel] Plat[te]s, *Hidden treasure* (= *Discoverie of infinite treasure, hidden from the world's beginning in the way of husbandry*, London, 1636, 4°, a later ed varies the title slightly *Discovery of infinite treasure hidden since the world's beginning, whereunto all men are friendly invited to be sharers with the discoverer G P*, London, printed for J E sold by H Moseley, 1639, 4°, also another ed, 1639, 4°, J L[egatt], sold by G Hutton)
- [39] [Edward Jorden, *A discourse*] of [naturall] bathes [and minerall waters especially of our bathes at Baith in Somersetsshire, London, T Harper, 1631, 4°, later eds, 1632, 1633, etc]
- [40]. [John] Cotta, *Contra [Antonium, or, an Ant Antony or, an Ant Apologie manifesting Doctor] Antony [his Apologie for aurum potable to be false and counterfeit, Oxford, J Lichfield and J S[hort] for H Cripps, 1623, 4°]*
- Latini**
- [41] [Georg] Agricola, *De re metall[ica]*, Basel, H Frobenius and N Episcopus, 1556, 1561, 1621, etc], Fol 1
- [42] [Georg Agricola], *De ortu [et causis] subterraneor[um] Interpretatio germanica* uoc[um] rei metallicae, Basel, H Frobenius and N Episcopus, 1546, also 1555 and 1558], Fol 1 (The ed published at Wittenberg, Z Schurerus, 1612, is 8°, not folio)
- [43] [Ioannis Danielis] Mylii [*Opus medico-chymicum continens tres tractatus sive basilicas, quorum prior in scribitur Basilica medica, [secundus Basilica] ph[ilo]soph[ica] (read chymica), [tertius Basilica] chymica (read philosophica)*, Frankfurt, Luca Jennis, 1618], 4° (Dr Jantz notes a copy (Winthrop's?) at NYAM, but of the second part only, Frankfurt, Luca Jennis, 1620)
- [44] [Johann Daniel Mylius], *Ph[ilo]soph[ica] reformata*, [Frankfurt, 1622, 4°, also 1638]
- [45] [Johann Daniel Mylius], *Anatoma* ♂^s (= *solis*, read *auri*) [sive Tyrocinium medico-chymicum, Frankfurt, 1628, 4°]
- [46] [Andreae] Libavii *Alchymia docimasima* (?), 4° (The last word is not recognizable in the full title of any of the various works of Libavius, published from 1595 to 1607, although in many of them 'alchemia' or 'alchymia' is the leading word Dr Jantz suggests that the baffling word may possibly represent 'dokimasia,' the Greek word for "experiment")
- [47] *Ep[isto]ll[a]e, vol[umina]* 2° (= *duo*), 8° (No two-volume collection of epistles has been noted in the literature)
- [48] *Not[a]e in Raym[undum] Lullium*, 4° (? ? = Ewald Vogel, *De lapidis physica conditionibus liber, quo duorum abditissimorum auctorum Gebri et Raimundi Lulli methodica continentur explicatio*, Cologne, Henricus Falckenburg, 1595, 8°)
- [49] [Claudius] Galen[us] De temp[eramentis], Paris, R Charterius, 1629], 4° (Other editions do not seem to be in 4°)
- [50] *Panacea Antigra[mama]*, 8° (= Andreas Libavius, *Antigramana secunda*, Frankfurt, 1595, 8°, or possibly some other of the works published by Libavius in 1594-96 against the *Panacea* set forth by G Anwald and supported by J Gramann, cf Gmelin, *Geschichte der Chemie*, I, p 345)
- [51] *Not[a]e libavian[a]e*, 8° (The most probable identification here seems to be. Andreas Libavius, *Commentationum metallicarum libri quatuor*, Frankfurt, 1597, although the size is 4°, not 8°)
- [52] [Andreas] Liba[vius], *Singularia*, [in 4 parts, Frankfurt, 1599-1601], 8° (Dr Jantz reports a copy (Winthrop's?) at NYAM, but only the fourth part, 1601)
- [53] [Petri Joannis] Ffabri *Myrotheciu[m] spagyricum*, Toulouse, P Bosc, 1628, 8°]
- [54] [Pierre Jean Fabre, *Insignes*] *curat[iones] variorum morborum*, Toulouse, 1626, Strasburg, 1632], 8°
- [55] [Pierre Jean Fabre], *Palladiu[m] spagyricum*, Toulouse, P Bosc, 1624, 8°, Strasburg, 1632, 8°]
- [56] [Pierre Jean Fabre], *Abrégé des secrets [chymiques]*, Paris, P Billaine, 1636, 8°] (This is in French, not in Latin, and duplicates No 29 above In his letter of 1641 Child writes to Winthrop "I found two peeces of Faber, viz, *Alchymista Xanus et Hercules Chymicus*, but because you haue not seene them, and according to my judgment they are bookes of noe great value, I bought them not, but will send you them with his *Abregé des Secrets* to peruse, from myne owne library I intend, if I haue leysure, to goe to Burdeau, from thence to Tholouse, to salute Faber" Another letter from Child to Winthrop, of 1643, remarks "Well, if our iron busines goe on, all is well I cannot further trouble my selfe at this time, but because I promised to tell you further concerning it, read in breife *Abregé des Secrets* Fabri, it will give you your desire, but his preparacions are too laborious for any man breathing")
- [57] [Pierre Jean Fabre], *Hercules [Pro-]Chymicus*, [Toulouse, P Bosc, 1634]
- [58] [Pierre Jean Fabre], *Alchymista xanus* (= *christianus*), [Toulouse, P Bosc, 1632, 8°]
- [59] Hartma[nn] in Croll[ium] (= Oswaldus Crollius *Basilica chymica aucta a Joanne Hartmann*, Leipzig, G Grossius, 1634, 4°, Geneva, 1630, 1635, 1638, etc The 1635 ed is 8°, by P Chouet)
- [60] [Johann] Hartma[nn], *Praxis [chymica]*, Leipzig G Grossius, 1633, 4°, Frankfurt, 1634, Geneva, J de Tourne and J de La Pierre, 1635, etc]
- [61] *Disputat[iones] eiusde[m]* (= Johann Hartmann, *Disputat[iones] chymico medicæ quatuordecim*, Marburg, P Egenolphus, 1611 and 1614, 4°)
- [62] [William] Davi[son], *[Philosophia pyrotechnica, sive curriculum] chymia[tricus]*, 1633-35, and often] (This may be referred to in the letter of 1641 as "Dr Dauson's workes")
- [63] [Petri] Severini *Idea [medicinae philosophicae]*, Basel, Adrianus Vlacq, 1571, 4°, Erfurt, 1616, 8°]
- [64] [Michaelis] Mayeri [*Arcana arcanissima, hoc est, Hyero[gly]phy[ca] aegyptio graeca*, London, 1614, 4°] (The British Museum Catalogue gives the place as [Oppenheim?] Not in Pollard and Redgrave Dr Jantz observes that a copy (Winthrop's?) at MHS has an engraved title page without place or date)
- [65] [Michael Maier], *Septimana ph[ilo]soph[ica]*, [Frankfurt, Luca Jennis, 1620, 4°]
- [66] [Michael Maier], *De physico circulo* (read *circulo physico quadrato*, [Oppenheim, Luca Jennis, 1616, 4°] (Dr Jantz reports a copy (Winthrop's?) at NYAM)
- [67] [Michael Maier], *Examen [fucorum] pseudo-chymicor[um]*, Frankfurt, T de Bru, 1617, 4°]
- [68] [Hieronim] Rubei *Liber de distillat[ione]*, Ravenna, 1582, 8°, Basel, 1585, 8° Venice, 1604, 4°]

- [69]. [Jacobus] Caranta, [*Decadum metaphysicarum liber primus de [natura]*] Ⓢ (= solis; read auri) [arte facti, Seville, Christophorus Strabella, 1623, 4°].
- [70]. [Alexandri] Carerii *Disputatio* (read *dissertatio*) [*an possint arte simplicia veraque metalla gigni*, Padua, 1579, 4°; Basel, 1582, 8°].
- [71]. [Joannis Augustini] Panthei [*Voarchadumia contra alchymia[m]*, Venice, 1530, 4°]. (It is possible, however, that the author's earlier work is meant: *Ars transmutationis metallica*, Venice, Joannes Tacuinus, 1518, 4°. The two, somewhat revised, appeared together: *Ars et theoria transmutationis metallica cum Voarchadumia*, Paris, Vivantius Gautherotius, 1550, 8°. Other editions appeared before 1600.)
- [72]. Abrahama [e Porta Leonis], *De* Ⓢ (= sole; read auro) [*dialogi tres*, Venice, 1514, 4°; Venice, J. B. a Porta, 1584, 4°; 1586].
- [73]. [Jani] Lacinii *Collectanea chimica cum Margarita novella pretiosa* Petri Boni, Basel, no date, 8°. (It is possible that the next item, No. 74, is really a part of No. 73, but it is not indented in the list and seems on the whole more likely to be meant as a separate entry. The two are in any case essentially the same work.)
- [74]. [Petrus Bonus], *Margarita p[re]tiosa [novella]*, Nuremberg, 1554, 8°; Basel, 1572, 4°; Montbéliard, Jacobus Foillet, 1602, 8°; Strassburg, 1608, 8°. (The first ed. varied the title slightly: *Pretiosa margarita novella de thesauro ac pretiosissimo philosophorum lapide, artis hujus divinae typus et methodus, collectanea ex Arnaldo, Rhaymundo, Rhasi, Alberto, et Michaele Scoto*, Venice, apud Aldi filios, 1546, 8°.)
- [75]. Rulandi *Disputationes* (= Martin Ruland the elder, *Progymnasmata alchemiae, sive problemata chymica, nonaginta et una quaestionibus dilucidata*, Frankfurt, Palthenius, 1607, 8°).
- [76]. *Promachomachia iatrochymica* Francisci Pruschi (read Bruschi), [Mantua, A. and L. Osanna, 1623, fol.]. (Gmelin, I, p. 571, note h, gives the place as Marburg.)
- [77]. *Theatrum chemicum*, [Strassburg, Zetzner, 1613], 5 vols. (The fifth volume was not added until 1622.)
- [78]. Ffallop. *De aq. miner.* (? ? = Gabriel Falloppius, *Libri tres de secretis*, 4°. For this Latin ed. no place or date is given, but the original Italian seems to have appeared in 1566, followed by French, German, and English translations down to 1641. The Latin is recorded by Lenglet Dufresnoy, III, p. 161. Child's entry might possibly be based on the title of book II [in German]: "Von allerhand Weinen und gebrandten Wassern," but it seems more likely that there was a separate publication.)
- [79]. [Antonii] Guntheri [*Observationes et paradoxa de usu et praeparatione medicamentorum chemicorum*, Leyden, 1631, 4°].
- [80]. [Georgii] Phaedronis [*Opuscula iatro-]chemica [quatuor]*, ed. J. A. Schenck, Frankfurt, A. Hummius, 1611, 8°].
- [81]. Volu[mina] 2° (= duo) *Alchymia[e quam vocant artisque metallica[e] doctrina]*, 8°, Basil[iae], Petrus Perna, 1572]. (This was apparently the partial reprint of G Gratarolo, *Verae alchemiae*, Basel, Petrus Perna, 1561, fol.)
- [82]. [Andreas] Cesalpinus, *De metallicis*, [Rome, A. Zanetti, 1596, 4°; Nuremberg, C. Agricola, 1602, 4°]. (Child, in a letter to Winthrop in 1644-45, says of Cesalpine: "Indeed he was but a speculative man, p[ro]fessour in Rome, whose authority I little regard.")
- [83]. [Michael] Potier, *Apologia [contra alchymistam impostorem]*, Frankfurt, the author, 1630 and 1631, 4°].
- [84]. [Michael] Potier, *Veredarius [hermetico-philosophicus]*, Frankfurt, Daniel and David Aubrius and Clemens Schleichius, 1622, 8°].
- [85]. [Johannis Nicolai] Ffurichii *Carmina* (= *Libelli carminum tres*), [Strassburg, J. Andreas, 1622, 8°]. (These poems, however, are not indicated as alchemical, but are grouped as "epigrammata," "anagrammata," and "carmina ad vitam pertinentia." The author's alchemical poems are found in two editions: *De lapide philosophico, seu Chryseidos libri 4, cum ejusdem annotationibus*, no place, 1622, 8°; and: *Chryseidos libri IIII, sive poema de lapide philosophorum, adjunctis poematibus nonnullis aliis*, Strassburg, E. Walperus, 1631, 4°.)
- [86]. Nihil, aliq[ui]d, o[mn]ia. (Not identified.) (As Dr. Jantz suggests, these words may not be a separate title. They may be a comment on the foregoing, or possibly a quotation from it.)
- [87]. *Tetras chymiat[ica Arnoldi]* Kernerii, [Erfurt, Johannes Röhbock, 1618, 8°].
- [88]. [Carolus] Wittstein, [*Disceptatio philosophica*] de 5 (read quinta) [*chymicorum*] ess[entia], Basel, Sebastianus Henricpetri, 1583 (?), 8°].
- [89]. *Evonymus* (= Conrad Gesner, *Thesaurus Evonymi Philatri de remediis secretis*, Zurich, Andreas Gesner and R. Wyssenbachius, 1552, 8°; and often).
- [90]. Augurelli *Carmina* (= Giovanni Aurelio Augurello, *Chrysopoeiae libri tres et Geronticon liber*, Basel, Joannes Frobenius, 1518, 4°; Antwerp, C. Plantinus, 1582, 8°; Geneva, 1639, 8°. The editions of his *Carmina*, Verona, 1491, 4°, and Venice, Aldus, 1505, are said not to contain these alchemical poems, *Chrysopoeia* and *Gerontica*).
- [91]. Geber, vol[umina] 2° (= duo), Ro[ma], Argent[orati]. (Since there is apparently no two-volume edition of the works ascribed to Geber, probably the present entry refers to two different copies, one the undated incunable ed. by Marcellus Silber, Rome, 8°; the other some one of the numerous Strasburg editions from 1528 to 1598.)
- [92]. [Joannis] Beguini *Tyrocinium [chymicum]*, no place, 1610, 8°; Cologne, Antonius Boetzerus, 1611, 12°; and often].
- [93]. [Francisci] Antonii *Apologia [veritatis illucescentis pro auro potabili seu essentia auri ad medicinalem potabilitatem reducti]*, London, Johannes Legatt, 1616, 4°].
- [94]. [Johannis Baptistae] Gro[ss]schedelii *Proteus [mercurialis] chym[icus]* (read *geminus*), [Frankfurt, Lucca Jennis, 1629, 8°].
- [95]. [Gerardi] Dornei [*interpretis Con]geries paracelsicae chemiae de transmutationibus metallorum*, Frankfurt, Andreas Wechelus, 1581, 8°]. (Dr. Jantz has found (Winthrop's ?) copy at NYSL.)
- [96]. [Guy ?] Dela Brosse, [*Tractatulus accuratissimus de compositione sulphuris et menstrui vegetabilis seu auro potabili . . . Magnati cuidam anno 1545 per celeberrimum medicum et philosophum gallum Dela Brosse dedicatus*]. (Apparently now known only as printed in the *Theatrum chemicum*, VI, 1661, p. 288, but a separate edition must have been in Child's possession. On the problem of the authorship, cf. Ferguson, II, p. 2. To be sure, the letter of 1641 says explicitly: "Della Brosse' at this time is not in my hands. I count it an excellent booke, and haue sent to Fraunce for it." Child doubtless considered it already as his own, and so put it in the list. Dr. Jantz acutely observes that the cross before this title and the corresponding cross in the first column beside the "Gallici" may mean that this was a French edition and that Child meant to indicate its transfer to the French list.)
- [97]. [Joannis] Chrisypi (read Chryssippi) [*Faniani Liber de metamorphosi metallica, et an sit*, Basel, 1560, 4°, and 1576, 8°; Paris, 1560, 4°; Montbéliard, 1602, 8°]. (It is possible that the author's other work [or works] is meant: *De artis alchimiae veterum auctorum et praesertim jurisconsultorum judicia et responsa ad quaestionem, an alchimia sit legitima*, Basel, 1576, 8°; *De arte metallica et jure alchimiae*, Basel, no date, 8°; *De arte metallica metamorphoseos . . .*, Paris, G. Guillard.

- 1560, 4°; Basel, 1576, 8°. Some of these titles may represent one and the same work.)
- [98]. *Animad[er]siones de alchym[ia]*. (Presumably a separate edition of the anonymous treatise now known in the *Theatrum chemicum*, V, 1660, pp. 821-33, under the title: *Animadversiones chemicæ quatuor*.)
- [99]. [Christopher] Horn, [*Dialogus*] de ☉ (= sole; read *auro*) [*medico philosophorum*, Frankfurt, Conr. Bifrid, 1615, 8°].
- [100]. [Johann Obendorffer], *Demons[tratio]* (read *Apologia chymico-medica practica...*) in (read *adversus*) [*illiberales Martini*] *Rula[ndi] person. medici calumnias*, Amberg, Förster, 1610, 4°].
- [101]. [Henrici] Nollii *Systema [medicinae] hermel[icæ] generale*, Frankfurt, Palthenius, 1613, 8°. (Dr. Jantz has seen at the NYAM a finely bound copy with the autograph of Nollius and Winthrop's note on this.)
- [102]. *Iatrochymia] luis venere*. (Not identified. I owe the reading of the third word to the keen eye of Dr. Jantz.)
- [103]. [Cornelius] Drebbel, *De elementis* (= *De natura elementorum*, Hamburg, 1621, 8°; Frankfurt, Gaspar Rotellus, 1628, 8°; Geneva, 1628, 8°; Lyons, J. de Tournes, 1628, 12°).
- [104]. *Harmonia chymicæ*. (Though the correspondence of titles is not perfect, this is probably a work mentioned in Child's letter of 1641 as "in fol. of 20° price": Francesco Giorgio, *De harmonia mundi totius cantica tria*, Venice, 1525, fol. On the other hand, Condeesyanus, *Harmonia inperscrutabilis chymico-philosophica*, 1625, and L'Agneau, *Harmonia seu consensus philosophorum chymicorum*, 1601 and 1611, are not in folio.)
- [105]. *Spagyrica pharm.* Potyeri (= Pierre Potier, *Pharmacopoea spagyrica, nova et inaudita*, Bologna, 1622, 8°. Dr. Jantz has seen Winthrop's copy at NYAM, with a ms. note that John Sherley borrowed the book.)
- [106]. [Jacobi] Zuingeri *Exam[en] chymicor[um]* (read *Principiorum chymicorum examen*), [Basel, Sebastianus Henricpetri, 1606, 8°].
- [107]. Rog[er] Bacon, *Chymica* (= *Sanioris medicinae... de arte chymiae scripta*, Frankfurt, Joannes Theobaldus Schönwetterus, 1603, 12°; reprinted 1612, 1620).
- [108]. [Thomas] Mouffet, *Chymia* (= *De jure et praestantia chymicorum medicamentorum dialogus apologeticus*, Frankfurt, heirs of Andreas Wechelus, 1584, 8°).
- [109]. Zynesii (read Synesii) et Democriti *Chymia* (= Synesius, in Democritum Abderitam, *De arte sacra, seu De rebus naturalibus et mysticis, commentarius latine versus a Dominico Pisimento*, Padua, 1572-73, 8°; also Cologne, 1574, 16°; Frankfurt, 1592, 1613, etc.).
- [110]. *Furnelli chymici*, 4°. (Not identified. The *Furni novi philosophici* of Glauber, Amsterdam, 1651, is a few years too late. Dr. Jantz is inclined to read "Bornellii.")
- [111]. [Danielis] Zenerti (read Sennerti) *Op[er]a o[mn]i[um]* [a] p[ar]t[ic]i[m] *chymica*, [Paris, 1633, fol.; Venice, 1641 fol.; and often].
- [112]. *Rhena*. 4° (? = Johann Rheinland, known commonly as Rhenanus, *Aureus tractatus latine datus solis e*

puteo emergentis, Frankfurt, A. Hummius, 1613, 4°; also 1623. His *Opera chymiatrica*, Frankfurt, C. Eifridus, 1635, is 8°, not 4°.)

INDEX OF AUTHORS AND EDITORS MENTIONED IN THE EXPANDED LIST

- Abraham Eleazar, 5
 Abraham e Porta Leonis, 72
 Agnelli (G. B.), 37
 Agricola (Georg), 41, 42
 Anthony (Francis), 93
 Anwald (G.), 50
 Arnaud (Pierre), 23
 Augurello (Giovanni Aurelio), 90
 Bacon (Roger), 13, 107
 Baruch (Samuel), 5
 Basilius Valentinus, 3
 Beguin (Jean), 92
 Bernard, Graf von der Mark und Tervis, 6
 Bonus (Petrus), 74
 Bornellus (?), 110
 Braceschi (Giovanni), 22
 Bruschi (Franciscus), 76
 Caranta (Jacobus), 69
 Carerius (Alexander), 70
 Cesalpinus (Andreas), 82*
 Chatre (René de la), 31
 Cotta (John), 40
 Croll (Oswald), 59
 Davison (William), 62*
 Dela Brosse (Guy ?), 96*
 Democritus Abderita, 109
 Dorn (Gerhard), 8, 95
 Drebbel (Cornelis), 103
 Duchesne (Joseph), 26
 Du Soucy (François), 33
 Eleazar (Abraham), 5
 Fabre (Pierre Jean), 29, * 53-8*
 Falloppius (Gabriel), 78
 Fanianus (Joannes Chrysippus), 97
 Figulus (Benedictus), 2
 Flameil (Nicolas), 23
 Furichias (Johannes Nicolas), 85
 Galenus (Claudius), 49
 Geber, 14, 48, 91
 Gesner (Conrad), 89
 Giorgio (Francesco), 104*
 Gramann (J.), 50
 Gratarolo (Guglielmo), 81
 Grossschedel (Johann Baptist), 94
- Guntherus (Antonius), 79
 Hartmann (Johann), 59-61
 Horn (Christopher), 99
 Jorden (Edward), 39
 Kerner (Arnold), 87
 Kieser (Franz), 9
 La Brosse (Guy[?] de), 96*
 La Chatre (René de), 31
 Lacinus (Janus), 73
 Lambye (John Baptista), 37
 Libavius (Andreas), 46, 50-2
 Lullius (Raimundus), 14, 48
 Maier (Michael), 64-7
 Mehung (Jean de), 12*
 Morgenstern (Philipp), 4
 Mouffet (Thomas), 108
 Mylius (Ioannes Daniel), 43-5
 Nazari (Giovanni Battista), 19
 Nollius (Henricus), 101
 Nuisement (Jacques), 28
 Obendorffer (Johann), 100
 Oliveriis (Oliverus de), 21
 Pantheus (Joannes Augustinus), 71
 Phaedro (Georgius), 80
 Planis Campy (David de), 24, 25
 Plattes (Gabriel), 38
 Potier (Michael), 83-4
 Potier (Pierre), 105
 Quattrami (Evangelista), 18
 Quercetanus (Joseph), 26
 Rhenanus (Johannes), 112.
 Richardus Anglicus, 14
 Ripley (George), 35
 Rochas (Henri de), 34*
 Rubeus (Hieronymus), 68
 Ruland (Martin), 75
 Sendivogius (Michael), 32
 Sennertus (Daniel), 111
 Severinus (Petrus), 63
 Suchten (Alexander von), 11*
 Synesius, 109
 Tancke (Joachim), 6, 7, 10
 Trissmosin (Salomon), 1, 27
 Vogel (Ewald), 48
 Wittstein (Carolus), 88
 Zwinger (Jacob), 106

* Mentioned in the correspondence between Child and Winthrop.

Bleaching Photographs with Chlorine

C. W. BENNETT, *Western Illinois State Teachers College, Macomb, Illinois*

AN interesting variation of the traditional demonstration of the bleaching action of chlorine can be made by placing a dry discarded photograph (we use damaged or obsolete college identification pictures) in one bottle and a moistened photograph in the next

bottle in the chlorine gas train. The dry photograph will go through the treatment practically unchanged while the picture will be completely removed from the wet one. (Evidently the dark silver in the paper is changed to white silver chloride.)

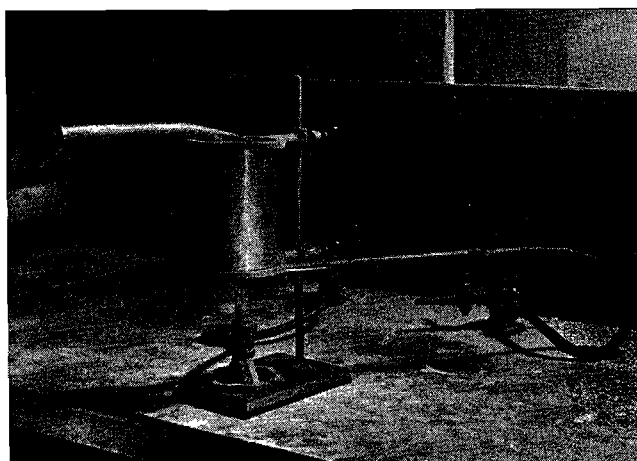
Laboratory Hot Air Blast

RALPH E. DUNBAR

North Dakota State College, Fargo, North Dakota

A BLAST of hot air that is instantly available in the chemical laboratory is a real convenience for drying glassware. Such a piece of equipment can be provided at little cost, or can be made from simple or discarded laboratory equipment. The illustration shows such an arrangement and is practically self explanatory.

A piece of three-eighths of an inch, inside diameter, copper tubing of four feet in length is carefully wound around a two-inch piece of iron pipe or rod forming a spiral so that the spacing between successive turns is approximately one inch. Care must be taken in bending the copper tubing so that the walls do not collapse sufficiently to greatly impede the flow of air through the finished coil. In case serious difficulty is encountered in making these turns the original straight copper tube may be poured full of molten lead before bending. After the coil is completed the lead can be readily removed by heating the coil and allowing the molten metal to drain from the lower end. Four or five complete turns in the final coil should be sufficient to heat the air adequately. The two ends of the copper tube should be left straight for some six or eight inches to make adequate provision for outlet and attachment to the air supply. The completed coil is slipped inside a six-inch section of a three-inch stainless steel, light-walled pipe. A few layers of asbestos paper between the coil and outer jacket will noticeably increase the heating efficiency of the equipment. The whole is then attached to a ring stand and firmly clamped in place with two three-inch iron rings. A Fisher Pittsburgh



Universal burner or similar type laboratory or Bunsen burner, with Fisher Burner Intensifier, is placed below the coil on the base of the ring stand. If the base of the burner is riveted or bolted to the base of the ring stand a more substantial arrangement is provided. The barrel of the burner may also be shortened to some two inches to secure a more compact and stable piece of equipment.

The lower end of the copper coil is attached to any laboratory source of compressed air, the burner to the usual gas supply. The air in passing through the coil is heated sufficiently to dry the 24-inch inner tube of a Liebig condenser in two minutes. If a large flame is placed under the coil without a current of air passing through the equipment the coil may overheat, causing a light deposit of oxide to form on the inside. This oxide will then be blown from the upper end of the coil when it is subsequently used, thus contaminating any glassware being dried.

For Cool Nerves

MENTHOL penetrates the skin or the mucous membrane to stimulate the coolness nerves. Perhaps it increases the sensitivity of the coolness nerves to cold, for menthol in the mouth does not produce the sensation of coolness until cool air is breathed which seems to fill the mouth with ice. Most of the cool feel of some shaving creams, lotions, and tooth pastes, as well as of peppermint candy, is due to menthol. Until recently, nearly all of the 250 tons of menthol used each year in this country was imported, initially from Japan, but then increasingly from China. In both countries it was made from a Japanese type of peppermint oil, an oil with an unattractive hay-like odor, but with about 65 per cent content of menthol, easily crystallized out on chilling the oil.

For some years, an acceptable partially synthetic menthol was made by chemical modification of citronella oil. With the fall of the Dutch East Indies, citronella importation ceased. At present, American manufacturers are using native peppermint oil, which runs about 50 per cent menthol, to eke out the small stock of natural menthol on hand, which has increased in value from four dollars to over thirteen per pound. It is now proposed to make menthol from thymol, which, in turn, is made from coal-tar creosote, thus supplementing the production of crops of high-menthol peppermint being raised this year and preventing any serious shortage of this valuable oil.

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